



ENDANGERED SPECIES TECHNICAL BULLETIN

Department of the Interior • U.S. Fish and Wildlife Service • Endangered Species Program, Washington, D.C. 20240

"Sting" Operation Reveals Massive Illegal Trade



Photo by Alan Levitt/U.S. Fish and Wildlife Service

The gila monster (*Heloderma suspectum*) shown above was among the animals seized. This species is the only venomous lizard in the United States and is sought by collectors. Though not federally listed, it is protected by all the States where it occurs.

by Michael Bender

A massive illegal trade in live reptiles, including 15 species covered under Federal and State endangered species laws, was revealed during a recently concluded "sting" operation. The action is being called the largest and most successful wildlife law enforcement investigation ever conducted. Of the almost 10,000 individual protected animals purchased by undercover agents, approximately 1,000 were classified as endangered or threatened, including about 200 on the United States list. A number of species on appendices to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) were involved. The confiscated animals have now been returned to the wild or transferred to zoos.

The Federally listed reptiles were the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), Jamaican boa (*Epicrates subflavus*), and Indian python (*Python molurus molurus*), all Endangered, plus the American alligator (*Alligator mississippiensis*), Eastern indigo snake (*Drymarchon corais couperi*), and New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*), which are Threatened.

The operation was announced on July 16, only hours after arrest warrants were issued for 27 individuals. Simultaneous with the arrest, over 40 search warrants were served, and almost 1,100 illegally held animals were seized, along with voluminous records documenting other violations. It is anticipated that as many as 160 persons might eventually be charged.

Based on intelligence from past cases, Fish and Wildlife Service law enforcement agents were convinced of the need for a large-scale investigation to infiltrate the illegal commerce. Undercover agents set up the Atlanta Wildlife Ex-

Service Prepares Guidelines For Ranking Candidate Species

The U.S. Fish and Wildlife Service has prepared proposed guidelines to assist in the identification of species that should receive priority review for listing under the Endangered Species Act of 1973, as amended. As required by the Endangered Species Act Amendments of 1978, these guidelines will be published in the *Federal Register* in the near future.

The guidelines establish two basic factors to be used in determining each candidate species' appropriate degree of priority for listing—(1) an estimate of the degree of threat, and (2) the taxonomic status.

Degree of Threat

The guidelines describe categories of species having high, medium, and low degrees of threat to their continued existence:

- A high threat species is one which is undergoing a precipitous population decline, or faces imminent threat (i.e. occurring in less than two years) which will essentially destroy all or a major portion

of its habitat. Extinction is almost certain in its immediate future unless rapid measures are taken to list it and develop a recovery program.

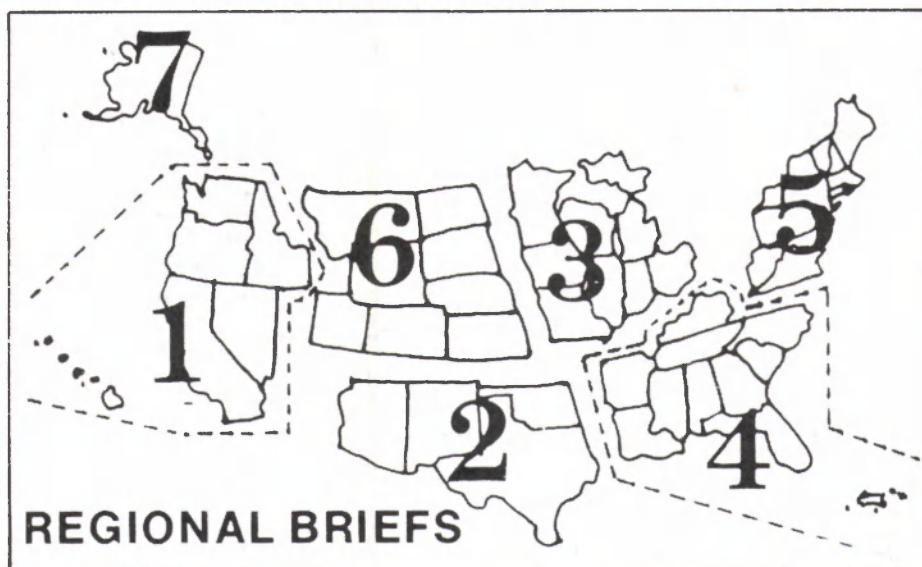
- A medium threat species is one which is undergoing a continual population decline or faces a short range threat (i.e. greater than two years but less than five years) which will essentially destroy all or a major part of its habitat. Listing or recovery of a medium threat species could be temporarily deferred without resulting in its extinction.

- A low threat species is rare or is undergoing a population decline which might be a short-term, self-correcting fluctuation. Rare species which face no known deleterious habitat threats within the next five years, or for which existing threats are not conclusively established are also considered low threat.

Assessments of species' degree of threat will be re-evaluated periodically as new information becomes available, thereby possibly changing an individual species' priority for listing.

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Endangered Species Program regional staffers have reported the following activities for the month of July.

Region 1—Seven separate sites within Mission Bay, California, have been recommended by a committee of Service biologists and local authorities to be

protected and managed for California least tern (*Sterna albitrons browni*) nesting. The bay, a major aquatic park in the city of San Diego, receives intensive human use for sailing, water skiing, power boat racing, fishing, picnicing, and other outdoor sports and contains

the second largest least tern colony in California.

Extensive predator trapping for mongooses and feral cats has commenced at the Pearl Harbor and Kii Unit of the James Campbell National Wildlife Refuge in Hawaii. One day trapping efforts resulted in a catch of 12 mongooses and one cat. The "day-time feeding" mongoose was brought to the big island of Hawaii in 1883 to control rats, which unfortunately were nocturnal animals, and later spread to other islands. Native wildlife, including many endangered species, are now threatened by this efficient predator.

Contracts have been finalized with eight botanists to conduct status surveys on 14 Nevada plants which are candidates for listing as Endangered or Threatened. These surveys are being funded through a cooperative agreement with the United States Air Force. Results of the surveys will be used in making listing decisions as well as in the environmental assessment for the MX missile project.

Region 2—On July 22, in the fourth year of the U.S.-Mexico joint effort to protect the Mexican nesting beach, 2,284 Kemp's Ridley sea turtle (*Lepidochelys kempii*) eggs were moved by the Mexican Fisheries Department and the Service from Rancho Nuevo, Tamaulipas, Mexico, to Padre Islands National Seashore. The Service hopes to establish a second nesting area for the species on the National Seashore, to be under the National Park Service's protection. Annually, the National Marine Fisheries Service head starts approximately 2,000 hatchlings for up to one year before they are released into the Gulf of Mexico. Approximately 90,000 eggs were laid on Mexican nesting beaches this year, similar to the number for the last few years. Final figures on the total number of eggs laid, hatchling rate, and the number of nesting females this season will be available from Region 2 in late August. (For more information, see October 1978 BULLETIN.)

The Arizona Game and Fish Department, U.S. Forest Service, and Region 2 of the Service have signed a Memorandum of Understanding which will pave the way for the reintroduction of the Gila topminnow (*Poeciliopsis occidentalis*) throughout much of the species' historical range in Arizona. Site evaluations and follow-up monitoring will be joint efforts of the three agencies.

Region 3—The Kirtland's Warbler Recovery Team met on July 12-13 to discuss funding plans and alternatives to complete management objectives set forth in the Kirtland's Warbler Recovery Plan.

Endangered Species Coordinators from Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin will meet August 12-14 in Brainard, Minnesota, to share program ideas. Participants in this annual event will tour

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U.S. Fish and Wildlife Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

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Minnesota State's trumpeter swan (*Olor baccinator*) breeding facility and visit some historic peregrine falcon (*Falco peregrinus*) eyries.

Region 5—As mentioned in the July BULLETIN, a nesting pair of peregrine falcons (*Falco peregrinus*) and two young were discovered in the White Mountains of New Hampshire. Both young have successfully fledged.

All 21 eaglets, which were transplanted from Alaska by the New York State Department of Environmental Conservation, are still alive and residing in their "eagle condominium" at Oak Orchard Wildlife Management Area in Genesee County, western New York. The mid-July operation went off well and the young should be flying by September. See the June 1981 BULLETIN for more information.

Dick Dyer, regional botanist, has completed the first draft of the Furbish Lousewort (*Pedicularis furbishiae*) Recovery Plan. The agency review draft of the Chesapeake Bay Bald Eagle Recovery Plan has been sent to Washington, D.C. for review.

In late July, a survey of Chittenango Falls, New York, was made by Federal, State, and Canadian personnel. During the course of the survey, 19 living Chittenango ovate amber snails (*Succinea chittenangoensis*) were found. The total population is estimated to be around 100 individuals.

Region 6—A questionnaire survey to help determine the current range of the black-footed ferret has been completed. Recent sightings (since January 1, 1970) were reported from all States within the ferret's former range, except Arizona. A total of 228 (61 confirmed and 167 probable) sightings were reported. A reduction of range is evident in most States. The survey report will be available from the Pierre Area Office by mid-September 1981.

Endangered Species Coordinators and Section 7 Team Leaders from the Area Offices attended an intra-Service meeting in Denver with Regional office personnel to discuss policies, procedures, and activities of the Endangered Species Program.

The May 1979 issue of the BULLETIN indicated that the Bureau of Reclamation and the Service had agreed to a study of the Endangered Colorado squawfish and humpback chub. Field work for the study will be completed this year. Also in 1979 the Bureau of Land Management (BLM) and the Service embarked on a much expanded one-year study on portions of the White and Colorado Rivers in Colorado. Since the bonytail chub was listed as Endangered in April 1980, this species will also be studied. Also, in 1981 the National Park Service and the Service agreed to a large-scale one-year study of endangered fish on portions of the Yampa and Green Rivers in Colorado. The studies will provide information on the distribution, abundance,

reproduction, movements, and habitat requirements of the endangered fish, and on the flow regime of the rivers. With this information the agencies will be in a much better position to determine the impacts that projects will have on these fish and their habitats.

Region 7—Preliminary results from this year's peregrine falcon (*Falco peregrinus tundrius*) survey-banding effort indicate that more than 200 young have fledged from known eyries. Of these, about 180 were banded. Productivity was particularly high in eyries along the Yukon River where several nests contained four young. Two band returns were received this month from peregrines that Service biologists banded as nestlings in 1980 on the Upper Yukon River. The returns were from Zacatecas,

Mexico, and Orlandia, Brazil.

The Aleutian Canada goose (*Branta canadensis leucopareia*) recovery effort plans for this summer included capturing wild geese and their young on Buldir Island and transplanting them to Agattu Island. These plans were altered when efforts to charter a vessel to reach Buldir Island were unsuccessful. However, 400 geese from Northern Prairie and Patuxent Wildlife Research Centers will be released in the western Aleutians on the Semichi Islands. Among this number are 16 "golden pairs" in which each adult male is a veteran of the Buldir to California migration. One of the primary goals of the recovery effort, which to date remains elusive, is to re-establish self-sustaining populations of geese on three former breeding areas.

Guidelines

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Taxonomic Status

Within any category of "degree of threat," taxa of higher rank will receive listing priority. Therefore, full species will be given priority over subspecies or populations.

Application of this priority system as presented in the accompanying chart would probably preclude listing activities related to species lower than category 11 (vascular plant species) during fiscal year 1982. Invertebrates and lower plants would not be listed nor would critical habitat be designated for previously listed species. Two factors, limited Service resources and the large

number of high threat vertebrates and vascular plants remaining to be listed, are responsible for these limitations.

No system can take into account all of the complex factors involved in Program decision-making; the Service proposes this priority system as a guide for cost-effective resource allocation. Comments from the public regarding this proposal should be addressed to the Director (OES), U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240.

An outline of data needed to place a species on the U.S. List of Endangered and Threatened Wildlife and Plants was published in the February 27, 1980, *Federal Register*. This information is codified at 50 CFR Part 424.

Listing Priority System

Degree of Threat

<p>HIGH</p> <p>MEDIUM 21-40</p> <p>LOW 41-60</p>	}	No field work needed	Mammals	Species	1
				Subspecies	2
			Birds	Species	3
				Subspecies	4
			Fishes	Species	5
				Subspecies	6
			Reptiles	Species	7
				Subspecies	8
			Amphibians	Species	9
				Subspecies	10
			Vascular plants	Species	11
				Subspecies	12
			Insects	Species	13
				Subspecies	14
			Molluscs	Species	15
				Subspecies	16
			Other plants	Species	17
				Subspecies	18
			Other invertebrates	Species	19
				Subspecies	20

Priorities 21-60 repeat the same taxonomic order for Medium and Low priority species categories.

"Sting"

Continued from page 1

change as a wholesale business in an Atlanta suburb, and distributed price lists containing a statement that the Exchange bought as well as sold "native" species—a code word for rare or protected wildlife. An extensive informal grapevine made sources and buyers of the animals easy to find, and the Service was soon surprised at the scope of the trade. Most customers were individuals or small independent groups, rather than parts of an organized conspiracy, and the backgrounds of those apprehended were surprising. Tape recorded transactions over the 18-month investigation involved zoo employees, police officers, teachers, bankers, a sheriff, and an attorney, along with various officials in the wild animal trade. About five percent of the "sting" operation's business consisted of foreign species from Australia, Central and South America, and Mexico, some of which were smuggled into the United States. In addition, many reptiles were sold to satisfy a thriving black market in Japan, Denmark, the Federal Republic of Germany, the United Kingdom (all parties to CITES), and the Netherlands.



Photo by Alan Levitt/U.S. Fish and Wildlife Service.

The above storefront served as "cover" for the recent wildlife law enforcement investigation.

The individuals apprehended were sought for violations of the Endangered Species Act of 1973, the Lacey Act, the Migratory Bird Treaty Act, postal statutes, conspiracy and false statement statutes, and various State laws. Both misdemeanor and felony counts were involved.

The lucrative unlawful trade in reptiles has expanded rapidly in recent years as

private collectors became willing to pay increasingly high prices for rare or unique specimens. Many of the animals are prized for their intense coloration or intricate patterns, while some others are sought for their unusual appearance. Unfortunately, the growing trade in illegally taken animals is causing severe damage to many wild populations and their habitats, and is often the direct cause for their precarious status.

Many of the species sold to the Atlanta Wildlife Exchange are considered extremely dangerous when handled improperly or by untrained persons. They included venomous snakes (copperheads, water moccasins, and 15 species of rattlesnakes), American alligators, and a pair of 13-foot Indian pythons.

The Fish and Wildlife Service estimates that as many as 100,000 reptiles, venomous as well as nonvenomous, are shipped illegally through the mail each year. Since such shipments are in violation of Federal postal statutes, the packages are usually disguised by false labeling. Rattlesnakes are silenced by taping the rattles. Boxes containing venomous reptiles have broken open in such places as post offices and airline terminals.

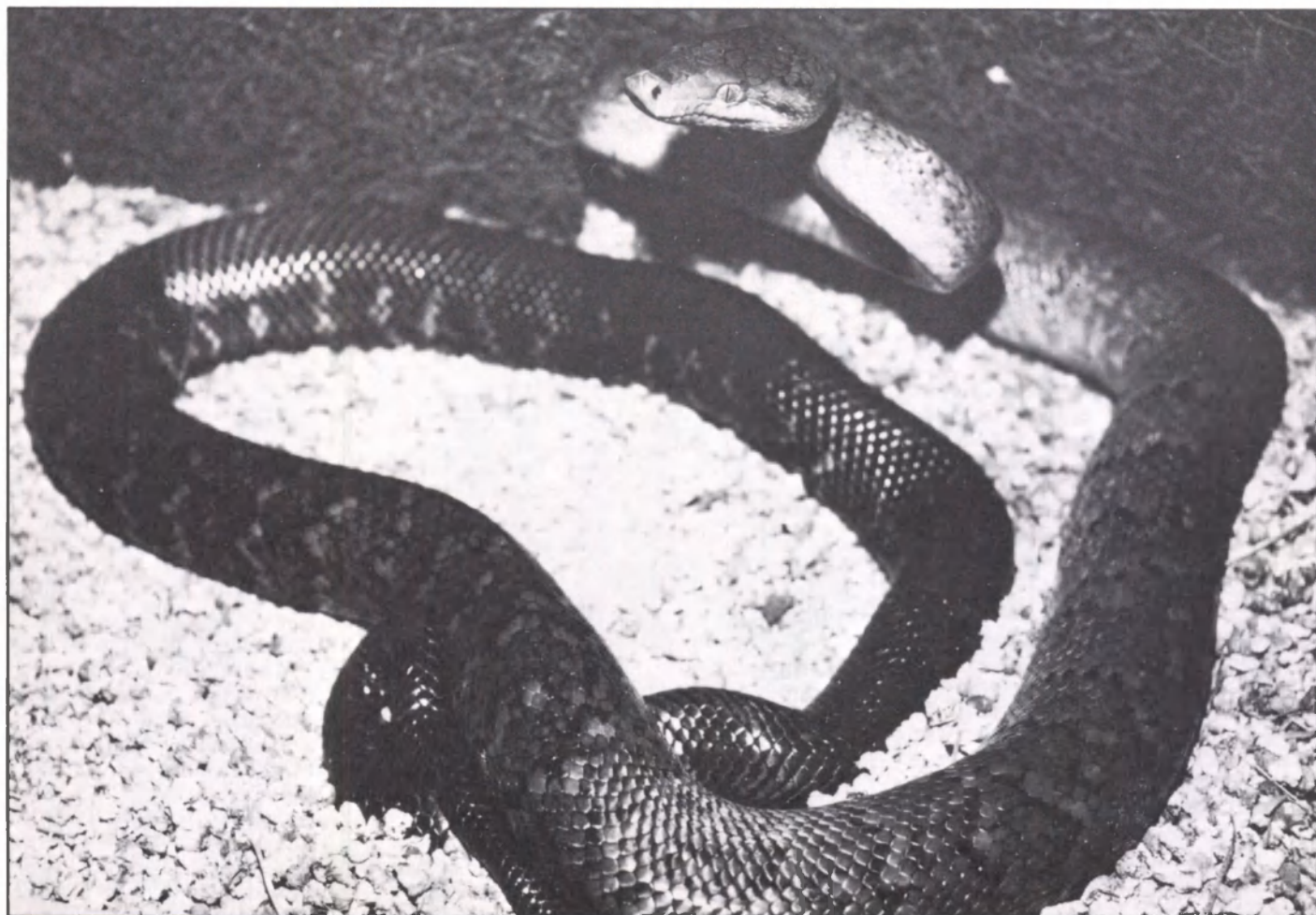


Photo by R.G. Tuck, Jr./Courtesy of the Smithsonian Institution

*Besides being subject to collection for the international pet-trade, the Jamaican boa (*Epicrates subflavus*), pictured above, is often killed on sight by man in its native habitats. It has also suffered from the presence of the mongoose (*Herpestes griesseus*). It is protected as Endangered under the Endangered Species Act of 1973.*

Rulemaking Actions

July 1981

New Special Rule Regulating African Elephant Proposed

A revised rule regulating trade in the African Elephant (*Loxodonta africana*), and its parts and derivatives, has been proposed by the Service (F.R. 7/17/81). If finalized, it would require all ivory imported into the United States to be marked according to the recommendations of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and would eliminate current prohibitions against certain domestic activities regarding African elephants.

The proposal would place more emphasis on the international aspects of the Service's efforts to control trade in the species and would also bring U.S. regulations into line with the international system agreed to by CITES parties. This is particularly important, since CITES is the only existing mechanism which requires international cooperation in trade controls relating to wildlife and plants and their parts and derived products.

The African elephant is listed on Appendix II of CITES, thereby requiring that a permit or certificate be issued by the country of export, or re-export in order to export, re-export, or import the species (including its parts or derivatives). On May 12, 1978, the Service listed the African elephant as Threatened under the Endangered Species Act of 1973 and promulgated a special rule, still in effect, which makes interstate and foreign commerce of the species illegal.

Under the special rule, a special purpose permit may be issued to authorize activities otherwise prohibited. Such permits usually apply to items already in the United States. The foreign commerce prohibition of the special rule does not apply to the importation of items originating in and exported or re-exported from a country that is Party to CITES.

Since adoption of the special rule, the Service has experienced difficulty in properly implementing its requirements, in particular, in assuring that a shipment of ivory which had originated in a CITES Party country had not entered a non-Party country, and if it had, that it had remained in Customs control while in transit. Also, the Service has found the special rule's restrictions on interstate commerce burdensome, ineffective, and unnecessary, and feels that maximum effectiveness for control of ivory trade can be obtained by putting its enforcement efforts into restrictions dealing with imports.

Background

A study commissioned by the Service and discussion by the CITES Parties, such as was held at a meeting of the Technical Expert Committee of CITES in January of 1980 and at the Conference Meeting at New Delhi in March 1981, indicate that the primary problem with elephants is the poaching and smuggling of ivory in its raw form. The CITES Parties, which include a number of ivory exporting nations, have decided that the problem would be best controlled by putting additional restrictions, particularly marking requirements, on the trade in raw elephant ivory.

CITES recommends that Parties authorize imports, exports, and re-exports only if they are satisfied that the ivory was legally acquired in the country of origin. Such assurance would be ac-



complished for raw ivory by requiring that permits or certificates accompanying such ivory be accepted only if they mention the actual country of origin and if the products are marked by means of punch-dies, using the following formula: country of origin (designated by a two-letter code established by the International Organization for Standardization), followed by the last two digits of the year of registration, followed by the weight of the raw ivory in kilograms (e.g. KE 127/8114). Aside from the above marking specifications, CITES remains general regarding its recommendations that importing countries be satisfied as to the legality of acquisition in the country of origin.

Given the difficulties of tracing the origin of individual items of worked ivory, the Service believes that the best method for meeting the CITES recommendation is to accept imports only from CITES Parties. Although another CITES

Party could accept shipments of raw or worked ivory from non-Party countries, and require that equivalent documentation be issued from those countries, the U.S. will urge other CITES Parties to accept shipments only from CITES Parties. This practice would restrict world trade in ivory to those countries that have legally obligated themselves to follow the provisions of CITES.

Recommendations

Because of the difficulties it has experienced, and because of recommendations made by CITES, the Service proposes to completely replace the existing special rule and to establish regulations which will drop the requirements for permits for interstate commerce in African elephants and their products, and also the requirement that imports have not passed through any non-CITES country. The proposed special rule would allow: (1) live elephants to be imported from any country, provided they have CITES documentation, or equivalent documentation from a non-CITES Party, as required by 50 CFR Part 23 (rules implementing CITES); (2) imports of raw ivory to be accepted only if they originated in a CITES Party and are being imported from a CITES Party, and have the official marking as required by CITES; and (3) imports of worked ivory and all other elephant products, such as hair and skin, to be accepted only from CITES Parties, with appropriate CITES documentation.

Licenses Required

CITES recommends that Parties license traders of raw ivory. Accordingly, the Service proposes in the new special rule that U.S. importers and exporters of raw ivory be licensed. Licensing required by 50 CFR Part 14, however, will suffice for this purpose and the Service does not anticipate that many persons will need additional licensing.

Exports of live elephants, or of elephant products including ivory, are not covered by this proposal. They require CITES re-export certificates, under 50 CFR Part 23.

Comments from the public on this rule must be received by August 20, 1981, to be assured consideration. They should be sent to the Director (WPO), U.S. Fish and Wildlife Service, Washington, D.C. 20240.

South Carolina State Report:



Endangered Species Projects Yield Valuable Management Data

Even though the bird is listed by the Federal government as an Endangered species, the Eastern brown pelican (*Pelecanus occidentalis*) is probably the most recognizable and visible of South Carolina's coastal birds. South Carolina has by far the largest nesting population of brown pelicans along the East Coast. This, however, was not always the case.

In the 1960's, due to the effects of the insecticide DDT, brown pelicans declined in the State. However, the gradual ban of DDT has enabled the bird to make a comeback, and it is now estimated that over 5,000 nesting pairs occur in two colonies in South Carolina. The next challenge for the pelicans, and for most other endangered species, is the rapidly declining amount of available habitat.

In 1977, South Carolina's Nongame and Endangered Species Program embarked upon a banding analysis and marking program that will assist the Program in evaluating the durability of leg markers and wing markers on the Eastern brown pelican in the State. Ultimately, information gathered from monitoring the marked birds will yield valuable management data on seasonal population trends, nesting efforts, and estimated reproductive success.

The State's plans for their pelicans coincide well with the recovery strategies outlined in the U.S. Fish and Wildlife Service's Eastern Brown Pelican Recovery Plan. The State has assisted in developing the plan and the Service has contributed funds to help do work on the pelican and on other endangered species in South Carolina.

South Carolina has two Cooperative Agreements with the Service under Section 6 of the Endangered Species Act of 1973. The first, signed in 1976, is directed towards the conservation of endangered wildlife. The second, an agreement for the conservation of endangered plants, was entered into by the South Carolina Heritage Program in 1981. Both agreements are administered by the Nongame and Endangered Species and Heritage Trust Section of the South Carolina Wildlife and Marine Resources Department.

South Carolina Program

The South Carolina Nongame and Endangered Species Program has a staff of eight biologists and technicians and is headed by Mr. Thomas Kohlsaet. It receives considerable support from the Heritage Trust Program with which it



Biologist Phil Wilkinson of the South Carolina Nongame and Endangered Species Program observes eastern brown pelicans on Bird Key-Stono.

Photo by Ted Borg/South Carolina Marine Resources Department

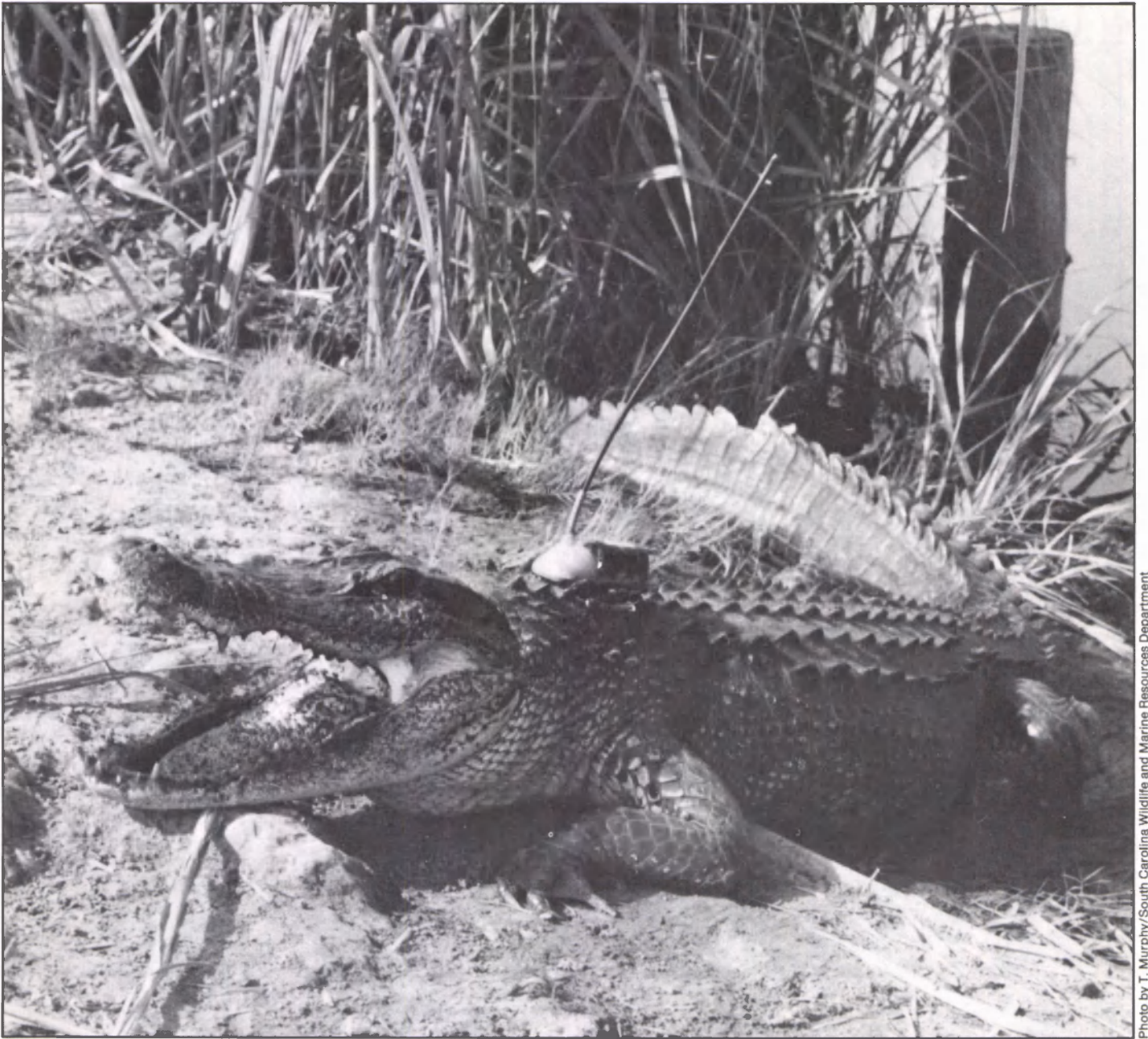


Photo by T. Murphy/South Carolina Wildlife and Marine Resources Department

Radio transmitters attached to the neck scutes of alligators have allowed South Carolina biologists to study movement patterns of the species. This 10'10" male is equipped with a 150 MH² prototype transmitter.

shares the same organizational niche in the Wildlife and Marine Resources Department.

The Program operates under the authority of two pieces of State legislation, the "Nongame and Endangered Species Conservation Act," which was passed in 1974, and the "Heritage Trust Act of 1976." The first legislation was drafted specifically to qualify the State for a Cooperative Agreement under Section 6 and contains provisions parallel to those of the Federal Act regarding investigation, listing, management, and law enforcement. The companion legislation, the Heritage Trust Act, gives

the Department the authority to conserve plants and to acquire habitat as part of its natural areas program. The State's Nongame and Endangered Species Act also establishes a nongame program for "species in need of management." These are, for the most part, species in South Carolina which need conservation assistance but may not be federally listed.

This year the Program received a State appropriation of \$80,000 and executed a project agreement for \$160,000 in Section 6 funds. An additional \$15,000 in State funds and \$30,000 in Federal funds were allocated to the plant program.

Major Wildlife Accomplishments

Heading the list of accomplishments are efforts which yielded the State considerable management information on three federally listed wildlife species, the American alligator (*Alligator mississippiensis*), the loggerhead sea turtle (*Caretta caretta*), and the bald eagle (*Haliaeetus leucocephalus*).

American Alligator

In South Carolina, the American alligator is near the northern limit of its range, where it exhibits slow growth

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Photo by John Cely/South Carolina Marine Resources Department

Jim Sorrow, a biologist with the South Carolina Nongame and Endangered Species Department, climbs a red-cockaded woodpecker nest tree in Clarendon County, South Carolina.

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rates and a long generation interval. It occupies extremely heterogeneous habitat and, therefore, progress in estimating its population level and reproductive parameters has been slow.

Nevertheless, during the 1980 night census cruises to evaluate habitat type, 1,968 alligators were observed in 526 miles cruised. The census revealed an upward trend in the count on the Ashepoo River and the highest count recorded for the Combahee River.

An ongoing activity of the South Carolina Program has been the management of "nuisance alligators." (In general, a *bona fide* nuisance exists when the animal exceeds 4 feet in length and is a threat to life and property.) In

fiscal year 1980, 208 alligators were captured and 55 additional complaints were investigated. Nuisance alligators are routinely live-captured and relocated, but preliminary indications are that many return to the point of capture. These returns occur despite relocation to different watersheds and distances in excess of 20 miles.

Loggerhead Sea Turtle

In recent years, four barrier islands along the coast of South Carolina have been the scene of some very interesting and valuable research on the loggerhead sea turtle. Radio and sonic telemetric monitoring of 36 nesting loggerheads during the 1977-79 nesting

seasons provided some of the first information on the movements and habitat used by the species while at sea. Since all but a small fraction of the turtle's life is spent at sea, it is obviously important to have this information in developing management plans.

One discovery made through the monitoring operation was that the turtles remain in the surf zone for extended periods of time prior to coming to shore. This fact demonstrates a potential for disturbance from the beach which was unknown before, and which would not be apparent to those on the beach causing the activity.

The extensive use of nearshore water by the nesting loggerheads throughout the nesting season clearly demon-



Photo by John Cely/South Carolina Marine Resources Department

*A tiny *Hyla andersonii*, one of the rarest treefrogs in eastern North America, rests on a pitcher plant at the Carolina Sandhills National Wildlife Refuge near Oxpens Lake.*

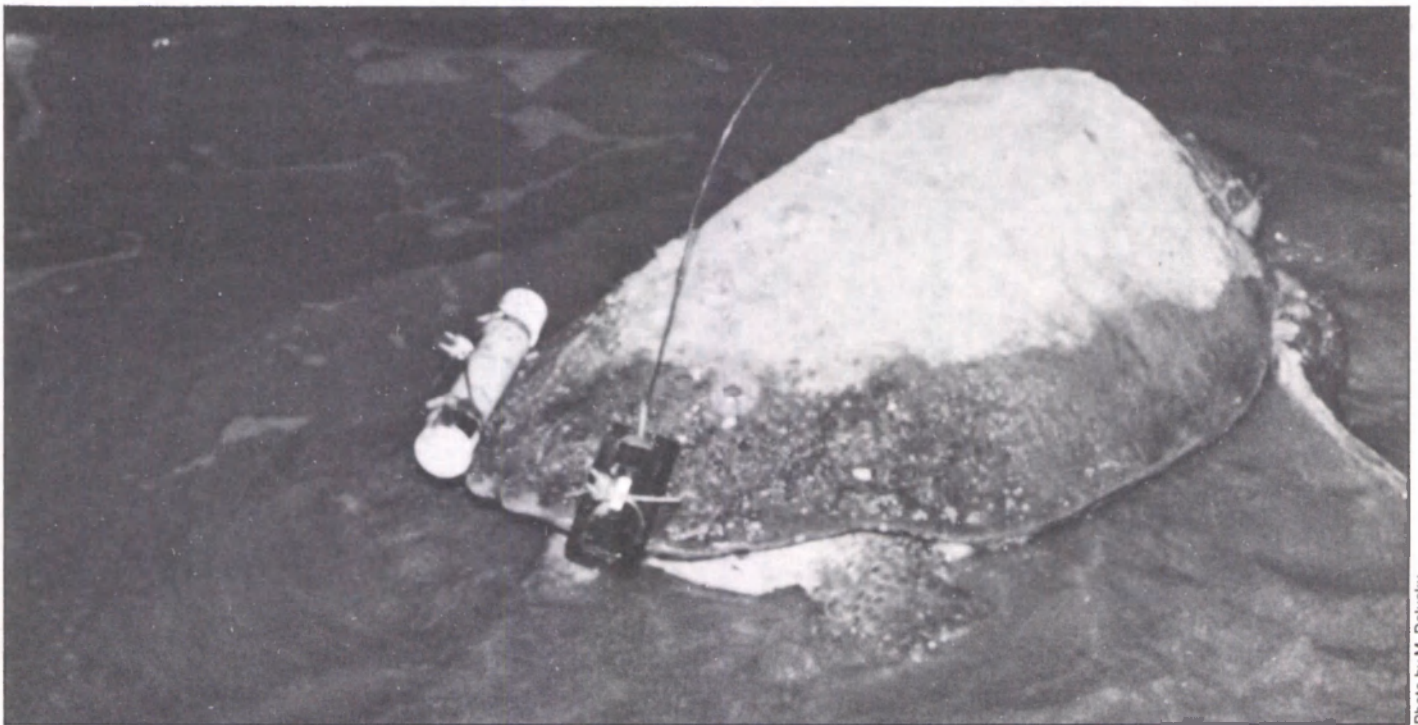


Photo by M. Dalusky

Following the attachment of both sonic (left side) and radio (right side) transmitters, this adult female loggerhead enters the ocean.

strates, also, the potential for conflict with nearshore commercial fishing. Finally, concentration areas were found to occur around obvious physical features such as jetties and shoals of the four study islands (North Island, Sand Island, South Island, and Cape Island) and along high relief contour lines in the offshore topography.

In a second phase of its loggerhead study, the South Carolina Program succeeded in quantifying the nesting effort and the causes and extent of nest mortality for a major portion of the State's loggerhead rookery. This is particularly important in light of increased nest losses, habitat degradation, and increased mortality of subadults and adults which have reduced populations

of all marine turtle species.

Prior to this research, it was generally believed that the only management necessary for nest protection was to reduce raccoon populations. This careful multi-year study, however, found that the relationship between nest predation by raccoons and red foxes, poaching, and erosion are compensatory. Therefore, several management actions may be necessary, depending upon the particular attributes of the island habitat.

Loggerhead studies continue in South Carolina and are planned through 1982. Additional planned and ongoing activities include radio-telemetric monitoring of loggerhead sea turtle strandings to determine a more precise relationship between observed strandings and actual

turtle mortality. Aerial surveys to obtain an index of relative abundance and the distribution of marine turtles utilizing offshore waters and nesting beaches in South Carolina are in progress.

American Bald Eagle

The State began monitoring bald eagle nesting activity and productivity five years ago. Surveys of historic nesting territories showed only 8 of 32 territories still active. (In many cases the old nests were still present.) Ten additional active territories, however, were located during the same years by aerial survey.

During the 1980-81 season, a total of
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Sarracenia rubra var. *jonesii* (mountain sweet pitcher plant) is protected by a Registration Agreement under the South Carolina Heritage Trust Program. The plant is listed as a Category I species in the Federal Notice of Review (F.R. 12/15/80).

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20 active bald eagle nesting territories were observed. These 20 territories produced 26 young to fledging—the most productive season of the State's 5-years of monitoring.

The displacement of nesting pairs in the State could have resulted from human disturbance or habitat alteration. However, in most areas of former nesting, the habitat is visibly unchanged. An explanation, in retrospect, is that pesticide contamination is probably largely responsible for the decline in bald eagles in South Carolina.

The current rate of productivity is adequate to sustain a bald eagle population, but the density and total numbers of bald eagles in the State is low. Active management of the species will be required to insure the continued existence

of breeding bald eagles in South Carolina. Thus far, the Program has registered five active bald eagle territories under the State Heritage Trust Program.

Red-Cockaded Woodpecker

Roughly 400 clans of red-cockaded woodpeckers (*Picoides* (= *Dendrocopus*) *borealis*) have been identified by the Program and the U.S. Forest Service. Work on this species has been limited mainly to monitoring clans on State-owned lands and providing advice to the managing agency. Due to rapidly changing forestry practices, the Program feels that the best chance for survival of significant numbers of this species is on public lands. Research conducted by the U.S. Forest Service and U.S. Fish and

Wildlife Service on relocating threatened clans has also been supported.

Pine Barrens Treefrog

The pine barrens treefrog (*Hyla andersonii*) is considered to be one of the rarest treefrogs in eastern North America. Isolated populations are present in South Carolina which the State protects as endangered. Program efforts on behalf of this species have been to locate additional populations in the South Carolina sandhills and to quantify the habitat of the species in terms of vegetation, soils, and hydrology.

Drought conditions during the summer of 1980 hampered the discovery of new locations of the treefrog. Only three new localities were found and many previously known colonies were inactive

during 1980. There was some new habitat found in Kershaw, Chesterfield, and Lee Counties which may support treefrogs during a summer with normal rainfall. Researchers have been surprised by the continued absence of frogs in the sandhills between Columbia and Aiken, despite the presence of suitable habitat and favorable calling conditions.

Current findings indicate the species has a strong fidelity to seepage bogs containing a mixture of grass-sedge-dominated meadows with few shrubs or trees, interspersed with shrub thickets. This type of vegetation is known as "hill-side bogs." The community is maintained by fire or mechanical means.

In the future, South Carolina field biologists intend to start their colony searches earlier in the year, such as March or April. They also plan to continue their searches of the sandhills and known localities and to prepare habitat descriptions for at least 30 colonies.

Gopher Tortoise

Work is also being done with another State species, the gopher tortoise (*Gopherus polythemus*), which is probably the most endangered reptile in South Carolina. Only 1500 tortoises remain in 2 or 3 colonies in Jasper County in the southern-most part of the State. Since all of its remaining habitat is privately owned, the State hopes to conserve this species by working closely with the landowners in implementing land management plans which are compatible with its needs. For instance, gopher tortoises feed on ground forbes and therefore controlled burning is sometimes necessary to allow this type of growth. Future plans for the species include acquisition of land through the Heritage Trust Program and, perhaps, the reintroduction of gopher tortoises into historical habitat or translocation of the species.

Plant Program Develops

South Carolina has had an active plant conservation program since 1974 and has been involved in rare plant inventory and management/protection since its inception. The program was given an official mandate in 1976 with the passage of the Heritage Trust Act.

This legislation specifically provides for three management/protection options: Dedication, Heritage Trust, and Registration. Each option involves voluntary transactions between the landowner and the Heritage Trust Program. These agreements range from total management by the State to protect certain species, to a "gentleman's agreement" with the landowner to look

after the species of concern.

To date the Heritage Program has acquired, in close cooperation with the Nature Conservancy, by purchase or donation five different properties totaling almost 25,000 acres. Four of these properties were acquired primarily to protect rare, threatened, or endangered plant species. Four plants included in the Federal Notice of Review published in the December 15, 1980, *Federal Register* have been afforded protection in this way. These plants are *Helonias bullata*, swamp-pink; *Hymenophyllum tunbridgense*, tunbridge fern; *Litsea aestivalis*, pond spice; and *Ribes echinellum*, spiney gooseberry.

Registration agreements have been developed with the owners of six different tracts of land, totalling approximately 2,210 acres. Six more plants included in the December 15, 1980, Federal notice have been afforded protection in this manner. These plants are *Coreosis latifolia*, broad-leaved *coreopsis*; *Sarracenia rubra* var. *jonesii*, mountain sweet pitcher plant; *Sarracenia rubra rubra*, sweet pitcher plant; *Saxifraga careyana*, Carey saxifraga; *Senecio millefolium*, divided-leaved groundsel; and *Solidago verna*, spring flowering goldenrod.

An unofficial cooperative management/protection plan also has been developed for one of the two federally listed plant species in South Carolina, the bunched arrowhead (*Sagittaria fasciculata*). The Heritage Program is currently working on protection plans for the other, the persistent trillium (*Trillium perstans*).

Projects this spring included a search for new populations of *Trillium perstans*; however, none were found. All other known populations were mapped. A considerable amount of other status and distribution work, along with habitat evaluation surveys, are currently being done by the plant program.

Looking to the Future

The Program expects to benefit from revenue collected with the State's newly created nongame and natural areas tax checkoff, which is similar to the successful checkoff systems established by other States. Regarding the new funding source and future emphases of the South Carolina Program, Mr. Kohlsaat stated: "We would like more and more to emphasize management of our State's endangered species. Perhaps, with the checkoff funds available, we will be able to do more work with smaller nongame animals, such as reptiles and amphibians. Also, we would like to do more work with all raptors, instead of just with eagles."

Plans for Two Marine Sanctuaries Progress

Waters Around Culebra/ Culebrita And Cordillera Islands Removed From List Of Active Marine Sanctuary Candidates

The Department of Commerce's Office of Coastal Zone Management (OCZM) announced recently (F.R. 7/13/81) that, in accordance with rules and regulations for the designation and management of marine sanctuaries, they will prepare draft environmental impact statements (DEIS) on two proposed marine sanctuaries in Puerto Rico in the waters off the coast of La Parguera and around Mona/Monito Islands. These areas were designated as candidates for marine sanctuaries by OCZM on December 18, 1980, along with the waters around Culebra and Culebrita Islands and the Cordillera reef chain located off northern Puerto Rico.

The determination to remove the northwestern waters from the List of Active Candidates at this time was made, partially, because of considerable local opposition voiced by residents of Culebra against any further Federal involvement in resource protection on or around the islands of Culebra and Culebrita. Commitment to other projects also made the designation of these areas not feasible at this time.

Finally, many of the resources in the Culebra/Culebrita/Cordillera area are also found within the waters at La Parguera and around Mona and Monito.

The two candidate sites, as well as the areas returned to the List of Recommended Areas, provide habitats for several Endangered species. (See the January 1981 BULLETIN for more information. Labels for Culebra and La Parguera have been reversed on the map which accompanies this related article.)

Symposiums

The Sigma Xi Club of Towson State University will host a symposium on September 3-4, 1981, to consider Endangered plants and animals in Maryland. Thirty-five authoritative presentations will be made, discussing a wide variety of species and populations of plants and animals (including invertebrates, vertebrates, cryptogams, and vascular plants), areas and types of habitat that are critical to the survival of these species in Maryland, and applicable private, State, and Federal programs. For additional information contact Arnold Norden (301/685-3105) or Don Forester (301/321-2385).

A "Symposium on the Management of Large Mammals in African Conservation Areas" will be convened by the National Programmes for Environmental Sciences (Nature Conservation Section) on April 29-30, 1982, for the purpose of examining problems relating to, and to develop guidelines for, the management of locally abundant large mammals in African conservation areas. It will be held at the CSIR Conference Centre, CSIR, Meiting Naude Road, Pretoria, South Africa. The working language of the symposium will be English. For more information contact: Ecosystem Programmes, CSP: CSIR, P.O. Box 395, PRETORIA 0001, Telephone (012) 86-9211x2706, Telex 3-630SA.

New Publications

Endangered, Threatened, and Sensitive Vascular Plants of Washington, April 1981, is available for \$.63 (please send exact amount in U.S. postage stamps) from the Washington Natural Heritage Program, 3111 Seminar Building (SE

BOX SCORE OF SPECIES LISTINGS

Category	ENDANGERED			THREATENED			SPECIES * TOTAL
	U.S. Only	U.S. & Foreign	Foreign Only	U.S. Only	U.S. & Foreign	Foreign Only	
Mammals	15	17	224	3	0	21	280
Birds	52	14	144	3	0	0	213
Reptiles	7	6	55	8	4	0	80
Amphibians	5	0	8	3	0	0	16
Fishes	29	4	11	12	0	0	56
Snails	2	0	1	5	0	0	8
Clams	23	0	2	0	0	0	25
Crustaceans	1	0	0	0	0	0	1
Insects	7	0	0	4	2	0	13
Plants	48	2	0	7	1	2	60
TOTAL	189	43	445	45	7	23	752

* Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, and Olive ridley sea turtle.

Number of species currently proposed: 18 animals
11 plants

Number of Critical Habitats listed: 48
Number of Recovery Teams appointed: 68
Number of Recovery Plans approved: 41
Number of Cooperative Agreements signed with States:
38 fish & wildlife
10 plants

July 31, 1981

3109), The Evergreen State College, Olympia, Washington 98505. Included in this publication are a main list of taxa which are considered endangered, threatened, or sensitive in Washington; a list of taxa possibly extinct or extirpated in Washington; and a monitor list of taxa of potential concern, but which have no proposed status at this time. The publication has taxa arranged by scientific name within each status category and includes (on the first two lists) the common name, family, Federal status (if any), and a brief description of distribution in Washington. An index, cross-referenced by common name to scientific name, is also included.

Kansas Nongame and Endangered Wildlife, February 1981, by Marvin D. Schwillig is available at no charge. To receive a copy, please write the Division of Nongame, Kansas Fish and Game Commission, 832 East 6th Street, Emporia, Kansas 66801.

Endangered Species Concepts, Principles, and Programs: A Bibliography by Don A. Wood was published by the Florida Game and Fresh Water Fish Commission, May 1981. Copies are available from the Division of Wildlife, Florida Game and Fresh Water Fish Commission, Farris Bryant Building, 620 South Meridian Street, Tallahassee, Florida 32304.



ENDANGERED SPECIES TECHNICAL BULLETIN

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